

Exercise 1 For each of the following functions, find two simpler functions f and g such that the given function can be written as a composite function $g \circ f$. The functions f and g should each be a famous function or a polynomial.

- If $g(f(x)) = \sin(x^2)$, then we could decompose this function into $g(x) = \boxed{\sin(x)}$ and $f(x) = \boxed{x^2}$.
 - If $g(f(x)) = \sqrt{2x^5 - 7}$, then we could decompose this function into $g(x) = \boxed{\sqrt{x}}$ and $f(x) = \boxed{2x^5 - 7}$.
 - If $g(f(x)) = e^{3x-x^2}$, then we could decompose this function into $g(x) = \boxed{e^x}$ and $f(x) = \boxed{3x - x^2}$.
 - If $g(f(x)) = |\ln(x)|$, then we could decompose this function into $g(x) = \boxed{|x|}$ and $f(x) = \boxed{\ln(x)}$.
 - If $g(f(x)) = 5e^{4x} + 7e^{3x} - 11e^x + 4$, then we could decompose this function into $g(x) = \boxed{5x^4 + 7x^3 - 11x + 4}$ and $f(x) = \boxed{e^x}$.
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